

Doctors, Doctrines, and Drugs in Ancient Times*

ETHEL E. THOMPSON

*Library Research Section
Eaton Laboratories
Norwich, New York*

EGYPTIAN PAPYRI

Take frankincense, cumin, and goose grease, boil together, apply externally, and you will be cured of your headache, advises the *Papyrus Ebers* (ca. 1550 B.C.), which contains prescriptions dating back as far as 3000 B.C. Among these are a mixture of milk, yeast, and honey, or pills compounded of honey, wormwood, and onion, to make an effective laxative; Assyrian plums, grapes, frankincense, cumin, wine, beer, yeast, and goose grease, well mixed, to form an excellent tonic.

In the days of the Egyptian dynasties (3400–332 B.C.) physicians were usually scribes who had studied the Sacred Books under the tutelage of the priests. Imhotep, the God of Healing, was a scholar, astronomer, and architect, and, although he left no medical writings, he is credited with the introduction of castor oil and other drugs into Egypt. Invocation to the proper deity was considered indispensable adjuvant treatment whenever a medicament was used. But even in those early days drugs sometimes produced troublesome side effects. We read of the goddess Isis brewing a concoction of “Berry-of-the-Poppy-Plant,” coriander, wormwood, juniper, and honey to cure the headache of the Great God Ra, which had been caused by some other hodgepodge cooked up by the Goddess Tefnut. This is believed to be one of the earliest references to the use of opium as an anodyne.

The compilation of remedies in the *Papyrus Ebers* consists of 700 drugs and 800 prescriptions, many of which were ascribed to gods and goddesses. From the plant kingdom, the Egyptians obtained peppermint, saffron, lotus flowers, linseed, henbane, anise, colocynth, and other items, while the animal kingdom supplied lizard's blood, swine's teeth, putrid meat, stinking fat, milk, moisture from pigs' ears, and excreta from humans, donkeys, antelopes, dogs, cats, and flies.

Some of the chief mineral substances were bitumen, magnesia, niter, vermilion, copper sulfate, and white lead. Extraction of these minerals,

* I wish to express my sincere appreciation to W. R. Bett, MRCS Eng.: LRCP Lond.: FRSL, for his valued advice and editorial assistance in the preparation of this paper.

which were compounded into pills, ointments, powders, macerations, liquids, salves, plasters, and filtrates, obviously required considerable knowledge of such chemical processes as pit-burning of plants rich in soda, and fractional distillation. Since natural fat and alkali were used together, the Egyptians were also acquainted with the technic of saponification.

Therapeutic agents like opium, iron, castor oil, senna, arsenic and calamine were sometimes prescribed rationally, but there were many more which were given irrationally, such as entrails of moles, raw meat for bites of crocodiles and of men, male semen, and "Excrement-of-the-Ad-Bird." For burns "A-Frog-warmed-in-Oil" and "Goat-Dung-in-Yeast-that-is-Fermenting" were employed. The proper incantation for the treatment of burns ran thus:

"O Son, Horus! There is Fire in the Land!
Water is not there and thou art not there!
Bring water over the River-Bank to quench the Fire".

"To-be-Spoken-over-Milk-of-a-Woman-who-has-Borne-a-Son".

The Egyptians made extensive use of beer as a vehicle to render their concoctions palatable—or tolerable. Of this ingredient there were many varieties: "Plain Beer," "Sweet Beer," "Swill-of-Beer," "Bitter Beer," "Flat Beer," "Beer-which-has-been-brewed-from-many-ingredients."

OLDEST MEDICAL RECORD

Beer was also a favorite condiment of the Sumerians, according to a clay tablet (*ca.* 2100 B.C.) excavated in the early part of the present century at Nippur, once a thriving city of Sumer in the southern part of Mesopotamia. This tablet contains more than a dozen prescriptions and is claimed to be the oldest medical record known. Most of the ingredients mentioned were obtained from plants, such as thyme, cassia, and myrtle, and from extracts of seeds, roots, bark and branches of fig, pear, date, willow, and fir trees, but there were also some items of animal origin, such as milk, snake skin, and turtle shell. Sodium chloride and potassium nitrate were the principal mineral salts used, suggesting that the Sumerians also had some knowledge of chemistry.

BABYLONIAN AND PERSIAN RECORDS

Many Sumerian processes and medicines were inherited by the Babylonians, since clay tablets found buried in Babylonian ruins contain references to Sumerian writings. It was the Babylonians who gave us the Code of Hammurabi (*ca.* 2250 B.C.), which regulated not only legal and social affairs, but also physician-patient relationships, and even established certain fees:

"If a physician set a broken bone for a man or cure his diseased bowels, the patient shall give five shekels of silver to the physician."

The Code also laid down laws governing veterinary medicine, and specified fees for healers of cows, sheep, oxen, and other animals.

The Babylonian physician was a combination of priest, physician, and pharmacist, who relied greatly on superstitious ritual and incantations to make his drugs effective. He took a hazardous chance if he performed an operation, for, instead of "an eye for an eye" or "a tooth for a tooth," he had to forfeit his hands if the patient lost an eye or his life.

The surgeon of ancient Persia took a less perilous risk, for he lost only his right hand in case of a fatality. Before he was allowed to practice at all he had to perform three successful operations—on infidels. Fees were established according to the social status of the patient. The *materia medica* (*ca.* A.D. 970) of Abu Mansur contains probably the most complete record of pharmaceuticals used in Persia in the fifth, fourth, and third centuries B.C.; it includes 585 drugs, 466 of which were of vegetable origin. The Persian physician-philosopher, Avicenna (A.D. 980–1037), wrote more than one hundred treatises in Arabic, which dominated medical thought and practice throughout medieval Europe, into the seventeenth century.

The Arabian physician was usually an astrologer or a magician, whose importance was gauged by the height of his turban and the length of his sleeves. For his services he received fabulous fees; it is recorded that one of Caliph Harun-al-Rashid's favorite healers was paid \$2,500 a year plus \$6,250 as a New Year's gift.

HEBREW MEDICINE—THE TALMUD

Much influenced by the Babylonians and Egyptians, the Hebrews, too, attributed diseases to demons and used magic in healing. Their surgical practices included circumcision, venesection, cupping, and cautery. Circumcision was performed by a "rophe," who was a surgeon as well as a priest, but venesection could be done by any skilled workman. The physician was a priest-healer who was held in great respect. After completing his preliminary education, studying the Sacred Books, especially the Torah, he served an apprenticeship under another priest-physician.

The Talmud gives the most complete information about the *materia medica* and medical practices of the Hebrews. One of their favorite ingredients was honey. Remedies from the plant kingdom were much the same as those which their Egyptian contemporaries and Sumerian predecessors possessed. From the animal kingdom they employed renal extract and bile extensively, and powdered pearls was a commonly used mineral substance. Their greatest contribution to medicine, however, was in the field of sanitation. Their laws of hygiene in the Mosaic Code laid down

strict rules regarding the "clean" and the "unclean." Among the diseases with which they were familiar were leprosy, cancer, gout, epilepsy, and venereal diseases. They also recognized certain mental disorders, as in the case of King Saul's attacks of melancholia.

INFLUENCE ON WESTERN EUROPE

The influence of these ancient civilizations spread to Greece and Rome, and we find many of their ideas, customs and medicines carried over into the early practices of Western Europe. The Greek God of Healing was Asklepios, legendary son of Apollo, who is credited with introducing Greek medicine into Rome.

The greatest exponent of Greek medical art was Hippocrates (*ca.* 460–370 B.C.), traditional "Father of Medicine." His keen power of observation was one of his most noted faculties, and the high ideals he established in the Hippocratic Oath are still used as a guidepost in modern medicine.

Greek physicians were craftsmen trained as apprentices under other physicians. They canvassed their services from house to house, but this custom was later replaced by that of each family employing its own physician, as in Roman times.

INDIA—THE SACRED BOOKS

In ancient India physicians were recognized from earliest times as a distinct class. In the sixth century B.C. there were two important universities for the study of medicine, Taxila and Benares, and in the fifth century B.C. the first hospitals of which we have record were established in Ceylon. According to the Atreya Samhita, composed in the sixth century B.C. by Atreya, "Father of Indian Medicine," diseases were classified as "curable by magic," "not curable by magic," "curable" and "incurable."

Among Indian doctors three great names stand out: Susruta (*ca.* A.D. 450), Charaka (probably A.D. 120–162), and Vagbhata (second century B.C. to A.D. seventh century, according to different authorities), who composed, respectively, three sacred books with a part of each devoted to medicine. In the Susruta Samhita such conditions as leprosy, scurvy, diabetes, and heart disease are described and classified, and 760 drugs from vegetable sources are named, including pomegranate, castor oil, opium, cassia, aconite, acacia, pepper, and ginger. Henbane (*Hyoscyamus niger*) and Indian hemp (*Cannabis indica*) were used as anesthetics. The Charaka Samhita lists 500 plants and gives 100 prescriptions for the treatment of leprosy, which probably included other skin diseases. Vagbhata contributed the Astranga Samgraha which describes emetics, astringents, purgatives, diaphoretics, clysters, and eye drops.

The Indians were also far advanced in the practice of surgery. There are four techniques mentioned for cauterization: the Ring, the Dot, Slant-

ing (or Lateral) Lines, and Rubbing Modes. Contraindications to surgery, dressings, and postoperative care are all systematically listed. Other operations described are piercing ears of children for earrings to ward off evil spirits, "Ganda Karna" (a kind of skin grafting) and rhinoplasty, neurosurgery, and intestinal suturing. Anesthesia was produced by potions or inhalation.

VETERINARY MEDICINE

Interest in diseases of animals can be traced to very ancient times in Babylon, and to the early days of Greece and Rome. Veterinary medicine was also practiced in India and Ceylon, the patients being chiefly elephants and horses. The first animal hospitals were established in Ceylon in the fifth century B.C. Many Indian writings on veterinary medicine were translated into Arabic.

CHINA—THE MEDICAL CLASSICS

As in other parts of the ancient world, in China also we find religion closely allied with the art of healing. This was practiced at first by priests and sorcerers, but as early as the Chou Dynasty (1140 B.C.), the functions of the priest and doctor were separated. It was during this Dynasty that the Chou Rituals (state examinations) were established. At the end of each year, the work of the doctors was examined, and promotions, demotions, and salaries were fixed accordingly. If only one patient in ten died, the record was considered exceptionally good, and the proud possessor of this high score was rewarded with an official position carrying a ponderous title and a super-ample salary, or with a teaching or writing post. Two patients lost out of ten was a fair percentage and entitled the holder of this score to a medical license. Three out of ten was a poor score, and if four patients died out of ten, the unlucky doctor was advised to study again.

Shen Nung (2838–2698 B.C.), who was a legendary character, regarded as the patron god of the native drug guilds, is credited with the compilation of an "Herbal" consisting of 365 drugs, 340 of which were of vegetable origin. The revised version of this book (A.D. 502) contains 730 drugs.

The *Canon of Medicine* by Nei-Ching (300 B.C.) is regarded as the greatest Chinese medical classic. It consists of the "Su Wen," conversations on medicine between the Emperor Huang Ti and his minister, Ch'i Pai, and the "Ling Shu," a treatise on acupuncture. Another Chinese classic is the *Great Herbal* compiled during the Ming Dynasty by Li Shi-ch'en between A.D. 1552 and 1578. It comprises 52 volumes and lists 1,871 therapeutic agents derived from waters, fires, earths, metals, minerals, plants, grains, vegetables, fruits, trees, insects, mollusks, birds, beasts, and animal organs. Among the drugs mentioned are eumenol, ephedrine, camphor, and ground sheep's thyroid for cretinism.

The great Chinese doctor, Hua T'o (*ca.* A.D. 200), used an effervescent powder (*Cannabis indica*?) in wine as an anesthetic, and later Chinese doctors employed *Datura alba*, *Rhododendron sinense*, Jasmine sambac, aconite, and plants containing atropine, hyoscyamus, and gelsemium to produce anesthesia.

Vaccinations for smallpox were described in China as early as the tenth century B.C., and a process called "moxibustion" was the oriental counterpart of cauterization, or counter-irritation, but with much worse results. It consisted of igniting combustible cones of powdered leaves of mugwort (probably *Artemisia vulgaris*) injected with a needle at various points on the skin.

AMERICAN INDIANS

The American Indians were familiar with such surgical procedures as trepanation, cautery, cupping, and venesection. The Aztecs (A.D. twelfth century) were acquainted with more than 3,000 medicinal plants, and many drugs from the plant kingdom were in general use by the North American Indians when the continent was discovered by the white man. These drugs included opium, tobacco (used in potions as a depressant), peyote ("sheep-sapote"), solandrine, atropine, scopolamine, hyoscine, tzompatti (a hypnotic drug), and purgatives such as jalap and cascara. Oil of copal served for fumigation. From the animal kingdom the American Indians obtained animal ash, calcined bones, blood, bile, extracts of brain and other organs, and bezoars (concretions found in the stomach, intestines, gallbladder, and urinary bladder). Minerals such as salt, gypsum, saltpeter, alum, gold, and amber were among their standard remedies, and they also made use of stones like jasper, bloodstone, and red ochre. Bloodstone was applied especially for hemorrhage and colic.

INFLUENCE ON MODERN MEDICAL PRACTICE

Many of these ancient drugs remained as standard medicaments for centuries, and some of them are still found in modern medical practice. From belladonna, a plant commonly employed as an analgesic by the early Babylonians and Egyptians, hyoscyamine, scopolamine, and atropine are now extracted and administered as mydriatics or as parasympatholytic agents. Ma Huang, a plant long known in China for its vasoconstrictive and decongestive properties, yields ephedrine, a drug which is now usually produced by synthesis. Digitalis, an important cardiac drug, is extracted from the leaves of the foxglove, a plant generally described in ancient medical writings.

Instead of the thyroid gland of animals for cretinism, the dried gland, or synthetic thyroxin is now employed for various thyroid deficiencies. Although cow dung from the Sacred Cow is still applied as a dressing for

wounds by the peasants of India, in modern practice, instead of the excreta of humans and animals, urea and other drugs are now synthesized for this purpose.

As we today look back upon the medical knowledge and customs of ancient times, thus will some inquisitive scholar 4,000 years from now, perhaps on some planet in a distant solar system, run across a translation of an ancient volume from planet Earth on twentieth century medicine and read it with amusement, wonder and bewilderment.

REFERENCES

1. MAJOR, R. H. *A History of Medicine*. Springfield, Illinois, Charles C Thomas, 1955. Vol. 1. (A standard comprehensive work in two volumes.)
2. SIGERIST, H. E. *On the History of Medicine*. New York, MD Publications, Inc., 1960. (A collection of authoritative essays.)
3. SIGERIST, H. E. On Hippocrates. *Bull. Inst. Hist. Med.* 2: 190-214, 1934. (An authoritative article, exploding many myths.)
4. GARRISON, F. H. *History of Medicine*. 4th ed. Philadelphia, W. B. Saunders Co., 1929; reprinted 1960. (A standard comprehensive reference and text book.)
5. LA WALL, D. H. *Four Thousand Years of Pharmacy*. Philadelphia, J. B. Lippincott Co., 1927. (A standard work on the history of pharmacy.)
6. GRAHAM, H. *Surgeons All*. New York, Philosophical Library, Inc., 1957. (A popular book on the history of surgery.)
7. KRAMER, S. N. *History Begins at Sumer*. Garden City, New York, Doubleday & Co., Inc., 1959. (An authoritative paperback book containing twenty-seven essays on Sumerian clay tablets, including photographs and excerpts of translations.)
8. VEITH, I. *The Yellow Emperor's Classic of Internal Medicine*. Baltimore, Williams & Wilkins Co., 1949. (A standard work on ancient Chinese medicine.)
9. SCOTT, N. E. The Metternich Stela. *Metropolitan Museum Bull.* 9: 201-217, Apr. 1951. (An authoritative article describing the stela, including photographs and excerpts of translations.)
10. LINTON, R. *Annual Ceremony of the Pawnee Medicine Men*. Chicago, Field Museum of Natural History, Leaflet No. 8, 1923. (An authoritative article dealing with the medical customs of the Pawnee Indians of the Great Plains.)
11. VON HAGEN, V. W. *World of the Maya*. New York, The New American Library of World Literature, Inc., 1960. (A popular paperback book describing various phases of Mayan life, based on ethnological and archeological findings. Illustrated.)
12. VON HAGEN, V. W. *The Aztec: Man and Tribe*. New York, The New American Library of World Literature, Inc., 1958.
13. VON HAGEN, V. W. *Realm of the Incas*. New York, The New American Library of World Literature, Inc., 1957.